

WHAT IS CLAIMED IS:

1. A microminiature power converter comprising:

a semiconductor substrate on which a semiconductor integrated circuit is formed;

a thin film magnetic induction element;and

a capacitor,

wherein the thin film magnetic induction element includes a magnetic insulating substrate, and a solenoid coil conductor in which a first conductor is formed on a first principal plane of the magnetic insulating substrate, a second conductor is formed on a second principal plane of the magnetic insulating substrate, and a connection conductor is formed in a through hole passing through the magnetic insulating substrate are connected; and

wherein a relationship of a length L of the magnetic insulating substrate in a direction vertical to a magnetic field generated by the solenoid coil and a length d of the coil conductor is $d \geq L/2$.

2. A microminiature power converter according to claim 1, wherein the magnetic insulating substrate comprises a ferrite substrate.

3. A microminiature power converter according to claim 1, wherein a surface of the coil conductor is covered with at least one of an insulating film and a resin in which magnetic fine particles are dispersed.

4. A microminiature power converter according to claim 1, wherein the first principal plane and the second principal plane of the magnetic insulating substrate of the thin film magnetic induction element are provided with electrodes electrically connected through a through hole.

5. A microminiature power converter according to claim 4, wherein the semiconductor substrate is electrically connected to the electrodes formed on the magnetic insulating substrate of the thin film magnetic induction element.

6. A microminiature power converter according to claim 5, wherein the electrode electrically connected to the semiconductor substrate is disposed on an inside surface separate from an outer peripheral end of the magnetic insulating substrate.

7. A microminiature power converter according to claim 6, wherein the principal plane of the magnetic insulating substrate on which the electrode electrically connected to the

semiconductor substrate is disposed is covered with a protection film which is in direct contact with a peripheral part surface of a whole outer periphery of the principal plane.

8. A microminiature power converter according to claim 7, wherein the protection film is a resist protection film.

9. A microminiature power converter according to claim 6, wherein a part of the semiconductor substrate and a peripheral part surface of a whole outer periphery of the principal plane of the magnetic insulating substrate on which the electrode electrically connected to the semiconductor substrate is disposed are covered with a direct contact binder.

10. A microminiature power converter according to claim 9, wherein the binder is an under filling.

11. A microminiature power converter according to claim 7, wherein a part of the semiconductor substrate and a peripheral part surface of a whole outer periphery of the principal plane of the magnetic insulating substrate on which the electrode electrically connected to the semiconductor substrate is disposed are covered with a direct contact binder.

12. A microminiature power converter according to claim 11, wherein the binder is an under filling.

13. A microminiature power converter according to claim 8, wherein a part of the semiconductor substrate and a peripheral part surface of a whole outer periphery of the principal plane of the magnetic insulating substrate on which the electrode electrically connected to the semiconductor substrate is disposed are covered with a direct contact binder.

14. A microminiature power converter according to claim 13, wherein the binder is an under filling.